

# Office of Environmental Health Hazard Assessment



Winston H. Hickox  
Agency Secretary

Joan E. Denton, Ph.D., Director

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## MEMORANDUM



Gray Davis  
Governor

**TO:** Charles M. Andrews, Chief  
Worker Health and Safety Branch  
Department of Pesticide Regulation  
P.O. Box 4015  
Sacramento, California 95812-4015

**FROM:** Anna M. Fan, Ph.D., Chief *AMF*  
Pesticide and Environmental Toxicology Section

**DATE:** June 22, 2001

**SUBJECT:** REQUEST REVIEW OF AN EMERGENCY REGULATION FOR METHYL BROMIDE FIELD FUMIGATION

The Office of Environmental Health Hazard Assessment (OEHHHA) has reviewed the Department of Pesticide Regulation's (DPR) proposed emergency regulation for methyl bromide field fumigation to amend Sections 6450.2(e) and 6450.3(a)(1)(C)2, dated June 18, 2001.

OEHHHA concurs with the DPR emergency regulations. In addition, the following changes are suggested.

### Changes to the draft "Emergency Regulation."

- 1) Page 3, line 15. Remove the word "dramatic" from the sentence.
- 2) Page 3, line 20. Replace the word "measurable" with the word "measurably."
- 3) Page 3, line 23. Remove the word "dramatic" from the sentence.

Thank you for providing the opportunity for OEHHHA to review DPR's proposed emergency regulations for methyl bromide field fumigation.

If you have further questions, please call me or Dr. Richard Ames at (510) 622-3170.

cc: Val F. Siebal  
Chief Deputy Director  
Office of Environmental Health Hazard Assessment

Richard Ames, Ph.D., M.P.H., Chief  
Pesticide Epidemiology Unit  
Pesticide and Environmental Toxicology Section  
Office of Environmental Health Hazard Assessment

California Environmental Protection Agency

*The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption.*



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Charles M. Andrews, Chief

June 22, 2001

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bcc: George V. Alexeeff, Ph.D., D.A.B.T.  
Deputy Director for Scientific Affairs  
Office of Environmental Health Hazard Assessment

Robert Haas, Ph.D  
Pesticide Epidemiology Unit  
Pesticide and Environmental Toxicology Section  
Office of Environmental Health Hazard Assessment



Paul E. Helliker  
Director

# Department of Pesticide Regulation



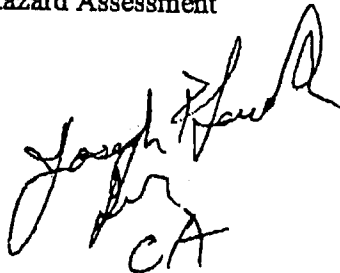
Gray Davis  
Governor

Winston M. Mickox  
Secretary, California  
Environmental  
Protection Agency

## MEMORANDUM

TO: Anna M. Fan, Ph.D., Chief  
Pesticide and Environmental Toxicology Section  
Office of Environmental Health Hazard Assessment  
1515 Clay Street, 16<sup>th</sup> Floor  
Oakland, California 94612

FROM: Chuck Andrews, Chief  
Worker Health and Safety Branch  
(916) 445-4260



DATE: June 20, 2001

SUBJECT: REQUEST REVIEW OF AN EMERGENCY REGULATION FOR METHYL  
BROMIDE FIELD FUMIGATION

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Attached for your review is a copy of the proposed Emergency Regulation and Text for Methyl Bromide Field Fumigation. Section amendments address buffer zone conditions and application equipment configuration. Your review is necessary to meet our joint and mutual responsibility for worker safety regulations outlined in Food and Agricultural Code section 12981. We would appreciate receiving your recommendations by the close of business, June 21, 2001, in order to file this emergency regulation.

Thank you for your assistance in this matter. If you have any further questions, please call me at (916) 445-4260 or contact Linda Irokawa-Otani at (916) 445-3991.

Attachments

# DRAFT 6/18/01

## EMERGENCY REGULATION DEPARTMENT OF PESTICIDE REGULATION

### TITLE 3. FOOD AND AGRICULTURE Methyl Bromide Field Fumigation

#### FINDING OF EMERGENCY

The Department of Pesticide Regulation (DPR) finds that an emergency exists and that the adoption of this regulation is necessary for the immediate preservation of the public peace, health and safety, or general welfare.

#### INFORMATIVE DIGEST

Methyl bromide is a pesticide commonly used in agriculture. Methyl bromide is a gaseous fumigant used to treat soil before planting vegetable, fruit and nut crops, and flower and forest nurseries. Depending on the crop, field applications may occur annually, or once every several years. Methyl bromide is injected into the soil with specialized application equipment that lays tarpaulins over the ground to minimize off-gassing for several days. After harvest, methyl bromide fumigation protects crops from pest damage during storage and transportation. The fumigant is also used for termite eradication in homes and other structures, and to control insects in mills, ships, railroad cars and other transportation vehicles.

Methyl bromide exposure may produce harmful effects on people and the environment. Exposure results from inhalation or absorption through the skin. Despite its harmful effects to humans and its classification as an ozone-depleting substance, methyl bromide still remains one of the most widely used pesticides in the world due to its outstanding efficacy and the lack of effective alternatives.

Methyl bromide is listed as a restricted material in 3 California Code of Regulations (3 CCR) section 6400(d). Possession and use for agricultural production purposes is allowed only under a permit from the local county agricultural commissioner (CAC). Before issuing a permit, the CAC must evaluate the application to determine whether it will cause environmental harm. Depending on the results of this review, the CAC may deny the permit or impose permit conditions including the use of specified mitigation measures. In evaluating permit applications, CACs must consider and, where appropriate, use information provided by DPR. For methyl bromide, DPR provides this information as suggested permit conditions. The suggested permit conditions represent minimum mitigation measures based on DPR's analysis of available data. CACs can impose more stringent mitigation measures dictated by the environment at the application site.

3 CCR contains regulations pertaining to the field fumigation use of methyl bromide. On January 14, 2001, DPR adopted regulations focused upon mitigating possible acute (short-term) methyl bromide exposure hazards to the public and agricultural employees. Suggested permit conditions formed the foundation upon which the regulatory action was based. The regulatory

action amended sections 6450 (Chloropicrin and Methyl Bromide-Field Fumigation) and 6784 (Field Fumigation), and added sections 6450.1 (Notification Requirements), 6450.2 (Buffer Zone Requirements), and 6450.3 (Fumigation Methods). In addition to amending use restrictions and general safe-use requirements for field fumigations, new provisions that were not contained in suggested permit conditions were added. These provisions include submission of a worksite plan at the time a property operator applies for a restricted materials permit, notification to neighboring property operators prior to a fumigation, extra protection for children in schools, establishment of minimum buffer zones, and new limits on work hours for fumigation employees.

The regulations prohibited inner buffer zones from extending onto public roadways. Unfortunately, the exposure to people traveling along roads would not warrant the restrictions. The impact of this restriction resulted in agricultural acreage being divided into smaller application blocks to be treated over several days over a longer period of time. Increasing the number of field fumigations, fumigation handlers are potentially at greater risk of acute methyl bromide exposure hazards due to the increased frequency at which application equipment requires disassembling prior to transporting to the next application.

DPR seeks to amend sections 6450.2(e) and 6450.3(a)(1)(C)2, to provide an immediate and effective mechanism to implement appropriate mitigation measures to protect workers from acute methyl bromide exposure hazards. It allows the inner buffer zone to extend into public roadways upon commissioner approval and corrects an improper application equipment configuration.

#### SPECIFIC FACTS SHOWING NEED FOR IMMEDIATE ACTION

Methyl bromide causes a variety of health effects in experimental animals and humans. To evaluate health risks, DPR scientists calculated target concentrations based on the toxicity of methyl bromide in experimental animals, and compared the target concentrations to the monitoring data. When data from animal studies are used to determine a margin of exposure (MOE), the target concentration is generally 100 times lower than the lowest dose that does not cause adverse effects (the no-observed-effect level [NOEL]) in animal studies. The 100-fold factor accounts for variation in sensitivity between individuals and assumes that people are more sensitive than experimental animals to the effects of methyl bromide. Air levels exceeding the reference concentrations, depending on the extent, would not necessarily pose an immediate health risk but may require mitigation to reduce the exposure.

A buffer zone is the area that surrounds a pesticide application block in which certain activities are restricted to protect human health and safety from existing or potential adverse effects associated with a pesticide application. A buffer zone is not an exclusion zone in which all entry is prohibited. DPR's buffer zone distances are set so that methyl bromide air concentrations measured at this distance do not exceed 0.21 ppm (24-hour time-weighted average), the level established by DPR in its risk characterization for methyl bromide. DPR has determined that the 0.21 ppm concentration level provides an adequate margin of safety. Buffer zone sizes,

measurement, and duration for each application method have been determined from both data received and evaluated by DPR and the results of monitoring studies conducted by DPR scientists. DPR data shows that, in some cases, the 0.21 ppm limit is not exceeded even with no buffer zones in place.

Recently adopted section 6450.2(e) specifies that the inner buffer-zone shall not extend into adjoining property unless the adjoining property is agricultural, and other requirements are met. This precludes the inner buffer zone from extending into public roadways. This provision has resulted in agricultural acreage being divided into smaller application blocks to be treated over several days, in multiple applications. The increase in number of fumigations of smaller parcels increases the number of times workers must transport methyl bromide to complete an application. DPR has been informed of increases in number of applications ranging from 10 percent to 30 percent. Fumigation handlers are potentially at greater risk of acute methyl bromide exposure hazards from the increased frequency at which application equipment requires handling and disassembling prior to transport. In addition, fumigation handlers are potentially at greater risk of accidents because of the dramatic increase in the number of trips to and from individual fields on public roads.

A buffer zone is not an exclusion zone in which all entry is prohibited. The original intent of the inner buffer was to avoid exposure above the target concentration level of 0.21 ppm average during a 24-hour period. Prohibiting the extension of the inner buffer zone onto public roadways did not measurably reduce risks to roadway users. However, this prohibition did increase the potential risks to workers from acute methyl bromide exposure hazards. DPR has concluded that there is potentially a greater exposure risk to workers from the dramatic increase in fumigations. This regulatory action would allow the inner buffer zone to extend into public roads, highways, and other similar means of travel or sites, upon CAC approval to further reduce potential exposure to workers.

In addition, this action would correct an application tractor equipment configuration used for the nontarpaulin/shallow/bed field fumigation method. This correction will prevent improper applications that could lead to increased acute methyl bromide exposures to workers.

It is necessary to take this action immediately because the high use period will begin in July. This action will provide the necessary protection from acute methyl bromide exposure hazards to workers, by implementing these appropriate measures.

#### AUTHORITY

This regulatory action is being taken pursuant to authority vested by Food and Agricultural (FAC) sections 11456, 12976, 12981, 14005 and 14102.

## REFERENCE

This regulatory action implements, interprets, or makes specific FAC sections 11501, 12981, 14006 and 14102.

## MANDATE ON LOCAL AGENCIES OR SCHOOL DISTRICTS

DPR has determined that the proposed regulatory action does not impose a mandate on local agencies or school districts, nor does it require reimbursement by the State pursuant to Part 7 (commencing with section 17500) of Division 4 of the Government Code because the regulatory action does not constitute a new program or higher level of service of an existing program within the meaning of section 6 of Article XIII B of the California Constitution. DPR has also determined that no nondiscretionary costs or savings to local agencies or school districts will result from the proposed regulatory action.

CAC offices will be the local agencies responsible for enforcing the regulations. DPR anticipates that there will be no fiscal impact to these agencies because CACs will be following the same restricted materials permit evaluation process that is currently performed. Processing permit applications falls under the current pesticide enforcement program that includes a negotiated work plan. DPR negotiates with the CACs an annual work plan for enforcement activities. DPR and the CACs use the work plan to prioritize and plan pesticide enforcement activities for the coming year. The work plan allows flexibility in evaluating pesticide enforcement activity needs, establishing priority pesticide enforcement activities, and if needed, redirecting pesticide enforcement resources.

## COSTS OR SAVINGS TO STATE AGENCIES

DPR has determined that no savings or increased costs to any State agency will result from this regulatory action.

## EFFECT ON FEDERAL FUNDING TO THE STATE

DPR has determined that no effect on federal funding to the State will result from this regulatory action.

# DRAFT 6/18/01

## TEXT OF EMERGENCY REGULATIONS

Current wording is indicated by regular type.  
Originally proposed deletions are indicated by ~~strikeout~~.  
Originally proposed additions are indicated by underline.

### TITLE 3. CALIFORNIA CODE OF REGULATIONS

#### DIVISION 6. PESTICIDES AND PEST CONTROL OPERATIONS

#### CHAPTER 2. PESTICIDES

#### SUBCHAPTER 4. RESTRICTED MATERIALS

#### ARTICLE 4. USE REQUIREMENTS

Amend section 6450.2(e) to read:

**6450.2. Methyl Bromide Field Fumigation Buffer Zone Requirements.**

- (a) The commissioner shall approve buffer zone sizes and durations based upon local conditions.
- (b) The operator of the property to be treated shall assure that all buffer zone distances are measured from the perimeter of the application block.
- (c) The buffer zone restrictions shall begin at the start of fumigation. The buffer zone restrictions shall remain in effect for at least 36 hours after the completion of the injection to the application block.
- (d) Two buffer zones, an inner and outer for each application block, shall be approved by the commissioner after the proposed worksite plan is submitted.
- (e) Inner Buffer Zone Restrictions.
  - (1) The inner buffer zone shall be at least 50 feet and The inner buffer zone shall not extend into adjoining property except as provided in (3) and (4) below.
  - (2) The operator of the property to be treated shall assure that no persons are allowed within the inner buffer zone except to transit and perform fumigation handling activities.
  - (3) The inner buffer zone may extend into adjoining agricultural property if the adjoining property operator gives written permission and allows the operator of the property to be treated to post the inner buffer zone boundary on the adjoining property with signs. If such written permission is given, the operator of the property to be treated shall assure that:
    - (A) the inner buffer zone boundaries on the adjoining property are posted with signs while the buffer zone is in effect; and
    - (B) the signs are posted so that the wording is clearly visible, to persons with normal vision, from a distance of 25 feet and shall contain the following words: "METHYL BROMIDE INNER BUFFER ZONE" and "KEEP OUT" and "NO ENTRE"; and
    - (C) the signs are posted at intervals not exceeding 200 feet.
  - (4) The inner buffer zone may extend across roads, highways, or similar means of travel or sites approved by the commissioner. The requirements in 6450.2(e)(3) shall not apply.



NOTE: Authority cited: Sections 11456, 12976, 12981, 14005 and 14102, Food and Agricultural Code. Reference: Sections 11501, 12981, 14006 and 14102, Food and Agricultural Code.

Amend section 6450.3(a)(1)(C)2 to read:

**6450.3. Methyl Bromide Field Fumigation Methods.**

(a) The fumigation shall be made only in accordance with the following restrictions, except for experimental research purposes pursuant to a valid research authorization issued according to section 6260.

(1) Nontarpaulin/Shallow/Bed

(A) Application rate shall not exceed 200 pounds of methyl bromide per acre.

(B) The application tractor shall be equipped with an air fan dilution system.

(C) Rearward-curved (swept-back) chisels shall be used with:

1. closing shoes and bed-shaper, or closing shoes and compaction roller; and

2. chisel injection points positioned beneath and ~~behind~~ ahead of the closing shoes.

(D) Injection depth shall be between 10 and 15 inches. The injection depth to preformed beds must not be below the bed furrow.

(E) Injection spacing shall be 40 inches or less.

(F) The soil shall not be disturbed for at least 3 days (72 hours) following completion of injection to the application block.

(G) The application block restricted entry interval shall be 3 days.

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NOTE: Authority cited: Sections 11456, 12976, 12981, 14005 and 14102, Food and Agricultural Code. Reference: Sections 11501, 12981, 14006 and 14102, Food and Agricultural Code.